Rural Drinking Water in Newfoundland and Labrador

Exploring Solutions for Sustainable Rural Drinking Water Systems

SYNERGY SESSION

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GRENFELL CAMPUS | MEMORIAL UNIVERSITY

THE HARRIS CENTRE Memorial University

Agenda

1. Welcome and Introductions (5 minutes)
2. Project Background (5 minutes)
3. Presentation on Final Report (15-20 minutes)
4. Recommendations (20-40 minutes)
5. Future Research Needed (10-20 minutes)
6. Breakout Session/Discussion (30-60 minutes)
7. Closing/Final Steps (5 minutes)

Introductions

Who are you and who do you represent?

Project Background

Objectives

- To determine the current conditions of drinking water in rural NL, including key issues and challenges from municipal, human health and resource sustainability perspectives;
- To create a profile of the drinking water policies, key players in water governance and their roles and responsibilities, and infrastructure that currently exist in rural NL;
- To determine population perspectives and practices related to water contamination, environmental management and sustainable solutions; and

Objectives…

- To research integrated watershed management and drinking water systems strategies employed elsewhere that may be applicable in rural NL, along with their relative strengths and weaknesses;
- To make recommendations based on the above research for research, policy and practice.

Research Team

Principal Investigator

- Kelly Vodden, EPI, Grenfell Campus- MUN

Co-Investigators

- Bing Chen, Faculty of Engineering, MUN
- Maura Hanrahan, EPI, Grenfell Campus-MUN
- Andreas Klinke, EPI, Grenfell Campus-MUN
- Mano Krishnapillai, Environmental Science, Grenfell Campus-MUN
- Atanu Sarkar, Faculty of Medicine, MUN
- Michael van Zyll De Jong, EPI, MUN

Community Partners

- Derrick Bragg, President, Professional Municipal Administrators
- Robert Keenan, Community Cooperation Office, Municipalities Newfoundland and Labrador
- Craig Pollett, Municipalities of Newfoundland and Labrador

Advisory Committee

- Faculty of Engineering and Applied Science, MUN
- Faculty of Medicine, MUN
- Municipalities Newfoundland and Labrador, Small Towns Director
- Eastern Regional Health Authority
- Municipal Operator/Town Manager
- Department of Environment and Conservation- Water Resources Branch
- Department of Natural Resources
- Department of Municipal Affairs
- Department of Health and Community Services
- Atlantic Canada Opportunities Agency
- Health Canada
- Newfoundland and Labrador Environmental Industry Association
- Atlantic Canada Water and Wastewater Association

Industrial Partners

Corner Brook Pulp and Paper Limited, Corner Brook, NL

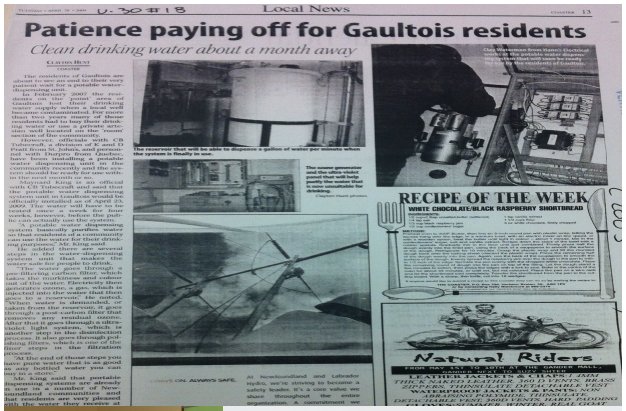
Ducks Unlimited, Corner Brook, NL

Compusult Limited, Mount Pearl, NL

Townsuite Municipal Software-PROCOM Data Services Inc., Gander, NL

Methods

- Literature Review
- Legislation and Policy Review (DPSIR)
  - Policy Workshop
- Media Scan
- Community Surveys and Consultations
- Case Studies
- Targeted interviews


Local News

Patience paying off for Gaultois residents

Clean drinking water about a month away

RECIPE OF THE WEEK

WHITE CHOCOLATE/BLACK RASPBERRY SHORTBREAD

Natural Riders

Analysis

- Nvivo
  - Pattern searching
  - Coding
- Consultation with experts and research team
- Final report draft
- Advisory committee and ease/impact assessment

Final Reports
http://nlwater.ruralresilience.ca/

- DPSIR scoping document ☑
- Drinking Water Policy Workshop report ☑
- Topic based reports and targeted literature reviews
  - Townsuite Municipal Software in Centreville- Wareham-Trinity ☑
  - DBP Reducing Technologies
  - Human Health Impacts ☑
  - NL/BC Comparative project on Regional Approaches
- Full case study reports
  - Woody Point; Port au Port East ☑; Black Tickle-Domino ☑; Sunnyside ☑; Makkovik; Greenspond ☑; Old Perlican ☑
- Case study summary reports (7)
- MNL regional workshops report ☑
- Community administrators ☑ & Water Operators survey reports

Final Report

Key Findings: Source Water

- DBPs a concern in many communities including most case studies
  - Challenges with dissolved organic content
  - Filtration uncommon
- Aesthetics (including taste and colour) also a concern
- Some communities indicated issues with low water levels
- Monitoring of PPWSAs lacking at the local level
- Watershed management plans uncommon

Key Findings: Infrastructure and Operations

- Ageing and degrading water infrastructure a major issue
- Mixed success with new technologies/systems (e.g. PWDUs)
- Lack of asset management
  - Lack of leak detection, maps, as-builts, and digitized mapping

Source: Paula Dawe

Key Findings: Infrastructure and Operations…

- **35%** of **LSD** operators and **21%** of **MOTOLs** have water operators with **no certification** (Administrators Survey)
- According to water operators survey Certified water operators
  - More likely to have complete maps of piped infrastructure
  - More likely to have a specific office or filing area for drinking water system information
  - More likely to have a maintenance plan for water treatment system
  - More likely to check chlorine residual twice daily in two locations

Key Findings: Public Perception, Awareness and Demand

- Both positive and negative perceptions of drinking water in rural NL (according to admin survey mostly positive)
  - Taste of chlorine disliked province wide
- Spring collection a cultural norm in much of rural NL
- Administrators levels of awareness often lacking
- Conservation practices not the norm

Key Findings: Policy & Governance

- Overall local satisfaction with provincial policies
- NL Water Resources Portal a useful resource (capacity dependent)
  - Local governments need more help with the Portal
- Lack of indicators for evaluating drinking water system sustainability
  - E.g. DWQI parameters narrow and excludes many communities
- BWAs more prevalent in COTOLs, particularly long term
- Not all BWAs are the same, but hard with the current system to differentiate – can erode resident trust in public drinking water systems
- Long term BWAs a concern, especially when they are not continually communicated to residents and become the norm

Key Findings: Policy & Governance…

- Multi-level governance could be improved, including integrated data management between provincial and local governments.
  - Need for increased opportunities for dialogue related to drinking water challenges in rural communities
- Need to expand permit to operate inspection and risk rating program
- Implementation of PPWSA regulations lacking

Key Findings: Policy & Governance…

- Sustained funding for provincial programs such as regional operator programs an issue
- Human and financial capacity at both the provincial and local level lacking (e.g. operator training, paid operators, auditors, outreach, etc.)
- Regional approaches seen as a solution at the provincial level, however those at the local level still sometimes skeptical

Recommendations

Recommendations: Policy, Regulations and Enforcement

1. Enhance stewardship of PPWSAs by local governments.
    1. Include PPWSA monitoring requirements in local level self-reporting, as well as require self-reporting on efforts taken to protect drinking water supplies.
    2. Encourage towns with supplies that are not designated as a PPWSA to do so.
    3. Provide outreach and education on the importance of and measures for protecting PPWSAs (see also recommendations for Education and Training). Towns should explore potentials for partnerships with non-governmental groups to undertake these activities.
2. Improve water conservation programs and policies.

Recommendations: Policy, Regulations and Enforcement

3. Develop more functional and user-friendly tools for assessing the state and vulnerability of drinking water systems (e.g. water quality, infrastructure and operations).

4. Develop and implement a strategy to address remaining long term and very long term boil water advisories.

5. Create a more effective advisory system for managing and communicating risks than the current BWA approach.
    1. Develop more descriptive advisories (e.g. a ranking system to differentiate between different types of advisories).
    2. Develop strategies to remove BWAs in a more timely manner once the issue of concern has been addressed, including considering allowing communities to bring in a least one of two samples required themselves to a NL Services lab, and only requiring one clean sample for those communities on a BWA due to low risk preventative maintenance/ mechanical reasons.

Recommendations: Policy, Regulations and Enforcement

6. Foster enhanced compliance with provincial drinking water policies and regulations. For example:
    1. Expand the Permit to Operate Drinking Water Inspection Program and make Permits to Operate publicly available on the Water Resources Portal.
    2. Provide more capacity (financial, human and technical) and opportunities for capacity building at all levels specific to enhancing compliance with water policies and regulations (see also recommendations for Education and Training below).
    3. Make self-reporting mandatory for public water system operators, so requirements under policies and regulations are clear.

Recommendations: Policy, Regulations and Enforcement

7. Increase opportunities for multi-level governance and dialogue at the local, regional and provincial scale, bringing together all levels of government (Federal, Provincial, Territorial and Local) as well as representation from other stakeholders such as non-governmental and industry groups. This would involve creating venues for integration, coordination and sharing information concerning water related matters.

8. Provide further incentives and sustained support for regional operators and other regional service sharing and drinking water management initiatives.

Recommendations: Education & Training

9. Offer more (and diverse) public outreach and education opportunities in various mediums concerning drinking water issues (e.g. source water protection, risks associated with untreated spring water collection, DBPs, home treatment options and conservation).

10. Provide greater education and capacity building opportunities concerning best practices on the management of drinking water systems for decision makers such as mayors, councillors and town staff.

11. Include mandatory certification for all water operators as part of the Water Resources Act legislation.

12. Offer more regional training opportunities for water operators.

Recommendations: Infrastructure & Operations

13. Enhance succession planning for water operators and designation of back up water operators.

14. Increase funding and support for asset management activities as well as management of relevant data concerning drinking water systems.

15. Implement Maintenance Assurance Manuals across the province with manuals that consider the particular challenges faced in small drinking water systems.

Recommendations: Infrastructure & Operations

16. Include full cost accounting and appropriate pricing for water services in fiscal framework discussions.

17. Improve chlorine management and create guidelines for maximum chlorine levels in provincial drinking water treatment standards.

18. Continue to invest and plan for re-investment to address the infrastructure deficit in rural NL with particular attention to communities experiencing chronic problems (e.g. long term BWAs and high DBPs).

Future Research

Future Research Needed: Water Supply

1. Assessment of challenges and solutions related to private well supplies.
2. Baseline studies on all drinking water supplies in NL (e.g. characteristics, threats, etc.).
3. Contributing factors to water shortages in NL communities as well as potential solutions.

Future Research Needed: Technology & Operations

4. Review of small systems operational best practices and an ongoing review of technologies that are appropriate and feasible for the rural NL context.

5. Feasibility of remote technologies such as chlorine analyzers readers for small water systems.

6. A cost-benefit analysis of implementing filtration and/or other DBP reducing technologies within small-scale systems as well as at the household level. These analyses should be comprehensive and consider different conditions (e.g. raw water quality, combination of technology, and operational factors).

7. Effectiveness of PWDUs as a rural drinking water solution.

Future Research Needed: Human Health Implications

8. Resident perceptions (e.g. risks, preferences) and uses of drinking water (e.g. types of water sources and consumptions levels).

9. Population based research on gastrointestinal illnesses in communities with long-term BWAs, short-term BWAs and those not on a BWA, to compare probability, incidence rates, and length of illness.

10. Long term health impacts of DBPs as well as baseline data of the health of people in communities in NL that have high DBPs (i.e. over the Health Canada guidelines) and those who do not.

Future Research Needed: Policy & Governance

11. Feasibility of and options for water conservation programs and related outreach activities.
12. Feasibility of regional water operators and other regional approaches.
13. New governance options for source water protection and watershed planning.
14. Improved indicators for drinking water sustainability (e.g. how to improve the DWQI).
15. Accurate full cost accounting for drinking water service provision.
16. Feasibility of a specific drinking water act for NL.

Break Out Group Discussion

Break Out Groups

- Breakout into three groups:
  - Research
  - Policy and practice
  - Participants on webcast

- Research
  - What are 2-3 areas for future research that you think are the most important and/or you think you could contribute to?
    - How can this be investigated? What is needed? Who should be involved?
- Policy and Practice
  - What are the 2-3 most important recommendations going forward?
    - How might this be achieved? Who should be responsible? What is needed?

Thank you!

And stay in touch!

- Visit our website: http://nlwater.ruralresilience.ca
- Contact Sarah Minnes,

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  Grenfell Campus

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